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ABSTRACT

This third of three articles on the ways in which people formulate their observations presents an analysis of the perspective or attitude dominating the discourse of an interview. The analysis is conducted according to a paradigm that views the speaker as the controller of discourse perspective. The relationships found in the analysis are represented three-dimensionally. The three-dimensional schema illustrates the mechanisms by which small variations in syntax are reflected in small variations in cognitive movement along the dimensions. (MSE)

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Concept Formulation
Part III
Analysis of Mentality

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Abstract

This is the third article of a series of three about concept formulation. It presents an analysis of the mentality of a free and unrestricted interview. The article starts with an illustration of the way in which an algorithmic analysis of natural language production has been carried out. Especially the functioning of the algorithm in differentiating objectives from the perspective is emphasized. By means of the agent function, meaningful conceptual relations can be unambiguously and automatically extracted. It is demonstrated that the extracted relations can be structurally represented by means of topographically described dimensions. Textual transformations are made visible in the form of a cubic space within which the developing cognitive process can be discerned. The configuration characterizing the process by nine distinct phases is finally discussed with respect to its parabolic dimensions.

The paradigmatic foundation of the strategy used in the analysis reported in this article is the Agent-action- Objective (A a O) paradigm (B. Bierschenk, 1984; Bierschenk & Bierschenk, 1986 a; I. Bierschenk, 1984 a, b). The paradigm, as we have outlined it, is founded on the Agent as the controller of a discourse perspective. The governing and controlling function is associated with the Agent component, which is central to the distinction and extraction of structural relations. It is basic for testing the following hypotheses:

Hypothesis 1: The syntax of language operates on alphabetical strings. These can be grouped by means of a smooth function with respect to their recurrency.

Hypothesis 2: As the process of conceptual formulation develops, alternative paths emerge in the transformation of information about observed environmental relations.

In the following, an algorithmic processing of running text will be exemplified on the first sentence of a free interview made with a Swedish municipal official. The algorithm is based on a rule system which has been presented in Bierschenk & Bierschenk (1986, b). Parts of it that apply to the exemplifications are reproduced here to make the presentation more comprehensible. The following rules apply:

Rule 1 Identify the next following sentence opener.
Rule 2 Define the beginning of a sentence with sentence opener [·]
Rule 3 Identify the strings within two sentence boundaries or sentence boundary and the end of text with graphical sentence.
Rule 4 Identify clause openers.
Rule 15 At least two verbs are enclosed within the end of sentence and a clause opener or two clause openers.
Rule 18 Identify the verb with active (a)
Rule 19 Unidentified string follows immediately after the verb.
Rule 20 Unidentified string follows immediately after a preposition.
Rule 21 Differentiate between verb (1) and verb (2) by [that]
Rule 24 Unidentified string does not follow immediately after a preposition.

Rule 31 An unidentified string precedes an a-verb.
Rule 33 An unidentified string does not precede an a-verb.

The operations of the rules are shown in the exemplification of the algorithmic analysis and its outcome on textual data.

The first sentence of the interview is worded:

Titta på hur inställningen är idag och det är ju
(Look at how the attitude is today and it is you know)
inte bara bland de kommunalt anställda, de flesta
(not only among the municipally employed, the majority)
tycker ju att jag har ju min lön, varför
(thinks you know that I have you know my salary, why)
ska jag då hjälpa till med att komma på hur
(shall I then help (to) with finding out how)
kommunen ska spara, det skiter
(the municipality shall save, that don't care a damn)
väl jag i.
(surely I about.)

The English translation given in parentheses is literal from Swedish. The empirical environment of the analysis to be presented later on is the context in which this official conceptualizes his position relative to his political principals. By letting this person outline in his own language what he is conscious of, one would be able to show the mentality underlying this verbal discourse.

Organizational Boundaries

How shall an analysis system proceed in approaching systematically this piece of discourse? In the same respect as observations in a physical environment are dependent on spatial dimensions, observations expressed verbally are layed out in a spatial organization. To provide scope for observing the multidimensionality of language, there are organizational cues for discerning observations from each other. Thus before a further analysis can be performed, the system must be aware of boundaries, that is beginnings and ends, in the continuous flow, since language is serially ordered in the production process. This system deals with language in written va-

riations in which the largest organizational level is the graphical sentence.

Def.: A graphical sentence consists of strings within two sentence openers.

As an organizational part of the graphical sentence one can identify the graphical clause.

Def.: A graphical clause consists of strings within a sentence opener and a clause opener or within two clause openers.

These organizational boundaries are identified with the help of registers telling which strings are sentence openers and clause openers respectively. Identification rules find these strings and mark them with a code. However, to identify the example sentence as a graphical sentence, the beginning of the text has to be equated with the beginning of a sentence, which means that a sentence opener must start the identification (Rule 2). The algorithmic analysis of the organization of the example sentence will thus be as follows. (C = conditional statement, R = rule. The bracketed paranthesis marks an insertion or identification. The arrows point at the results of an operation.)

C 1	If the beginning of a sentence is not defined, then R 2	R 2 → [.]Titta → R 1 R 1 → väl jag i . → C 2
C 2	If a string follows immediately after a sentence boundary, then R 3	R 3 → [.]Titta ... väl jag i . → C 4
C 4	If a clause opener is present, then R 4	R 4 → hur och , att , varför då att hur , →

Comment. After the operation of Rule 3, the sentence is ready for processing. The system identifies two or more clause openers immediately following each other as a technically defined sentence opener, for example ', varför' (', why').

Conceptual Boundaries

The central cue for identifying a clause as a conceptual unit is the verb. Each verb within an organizational boundary is a cue to one conceptual clause. This means that graphical clauses without a verb are no organizational units. The rules operate with this distinction.

Def.: A conceptual clause is a graphical clause or sentence containing one verb. If two or more verbs are present, then there are as many conceptual clauses to identify as the number of verbs.

After the verbs have been identified according to a register, the system checks for the one-verb criterion by counting their number within two boundaries. It differentiates between the first and second of two verbs and marks by inserting a technical clause opener immediately before the last one of two verbs (there may be several). After this is done, the ranking is nullified. This analysis procedure is exemplified on the following graphical clause:

... hur kommunen ska spara, ...
(... how the municipality shall save, ...)

C26:1 If at least two verbs are present before the immediately preceding clause opener, then R15, R21

R15 → ska(1) spara(2) → R21
R21 → att spara(2) (1,2)
blank →

The method explicitly considers linguistic observations as presentations of environmental processes. Thus the act of processing is stated by the verb and the cognitive differentiation by objectives, cued by no preposition (Figure), spatial preposition (Ground), instrumental preposition (Means), and intentional preposition (Setpoint), as defined in a register. The prepositions are used in the rule system as identifiers of conceptual information. So the string which is looked for can be either prepositional (the preposition is the first string of a sequence) or non-prepositional. The prepositional string will be exemplified with the Ground component. Means

and Setpoint follow the same principle.

Def.: A Figure is the non-prepositional string immediately following the verb.

Def.: A Ground is the string immediately following a spatial preposition.

The following graphical clause contains both a Figure and a Ground:

...	och det är ju	inte bara bland de	kommunalt	[att]	
(...	and it is you know not	only among the	municipally	[that]	)

C12	If the last character of the last verb is not an 's', then R18	R18 → är(active) → C13
C13	If a non-prepositional string follows immediately after the verb, then R19	R19 → ju(Figure) inte(Figure) bara(Figure) → C18:1
C18:1	If a prepositional string follows immediately after a non-prepositional string, then R20	R20 → de(Ground) municipally (Ground) →

Comment. The system considers the hierarchization that is a result from several prepositional strings following each other. Further, there is a rule that takes care of the multistring components and differentiates them in terms of intentional (main) string and orientational (sub) string (see the coding example on the textual data). The technically inserted clause opener [att] tells that 'anställda' ('employed') belongs to the verb register. The criteria set up so far for defining verb strings are that the string shall be identified as a stem or a stem plus an inflected suffix belonging to the finite or infinite forms, that an auxiliary shall be regarded as an independent verb, and that identification shall be based exclusively on " intra-string " criteria. The consequence of the third criterion is that nominalizations by participles ('de ... anställda' ('the employed')) are not considered. The three criteria

together reflect the standpoint that the active sense of the verb forms is the primary one. Experiments with texts have shown that there will be textual relationships missing, if the nominalized sense is given priority. The intra-string criterion also holds for the definition of a passive verb, thus for Swedish the inflected s-form. By passive verbs the position of the Figure is before the verb, which calls for a different algorithmic seqence.

The responsibility of this differentiation is represented by the Agent component, which has the controlling function in the system. In the following is shown the operation of the Agent.

Def.: Agent is the non-prepositional string immediately preceding the verb. The Agent string is extended by an immediately following prepositional string.

..., de flesta tycker ju att ...
(..., the majority thinks you know that...)

C23:1 If an unidentified string precede the active verb, then R31 → R31 → de(Agent) flesta(Agent) → C18:2

C18:2 If the verb immediately follows the Agent string, then → clause is ready

Comment. No Agent is textually present by passive verbs. Differentiation by prepositions only takes place after the verb. Before the verb, this information is regarded as integrated (bound to the Agent).

The conceptual scheme is complete when an Agent, a verb, and at least one Objective are present. Each time when these conceptual components are absent, the system marks by a placeholder with a symbolic [A] and [O] function respectively. Supplementation rules specify where in the textual environment the conceptual information can be automatically picked up an inserted. The general principle is that the Agent is looked for backwards and the Objective forwards. The first takes a component, the other a clause. Other principles cooperate with this one in making textual transfers.

By this mechanism, the system distinguishes the textual agents from the empirical agent. It is the empirical agent who decides which agents shall present his perspective in the discourse. The empirical agent is conceptually defined (1) by passive verb, and (2) by a sentence opener blocking the textual agent from showing up before the verb. In the first case, he indicates an involvement in a process, while in the second, he shows up by means of his contextual or experiential background.

An example of an analysis inserting placeholders will be given based on the beginning of the example sentence:

... [.]Titta på hur ...
(... [.]Look at how...)

C16 If a preposition is the last string after the verb, then R24 → R24 → på Aa [Ø] → (Ground absent) → C23:2

C23:2 If an unidentified string does not precede the active verb, then R33 → R33 → [Ø] aO Titta → (Agent absent)

Comment. According to the general supplementation principle, the Ground is the conceptualization of the clause beginning with 'hur' ('how'), that is 'inställningen + idag' ('the attitude + today'). The absence of a textual agent implies the presence of the empirical agent. The supplementation rule replaces the Agent placeholder with an a priori definition, such as the name of the text producer, or the variable (X).

Set-up of Matrices

The first step to take after the algorithmic analysis is to determine the relational affinity between the agents anf their objectives. Relational affinity is defined by means of the function of the verb. When the verb marks a relation between an agent and a particular objective, this relation is indicated (1), otherwise an independence is marked (0). An empirical gouping of the agents or their objectives respectively requires the set-up of a series of

matrices of the N x n type. These constitute the prerequisite of detecting the most suitable category structure.

The search logic developed brings together textual elements identified with a certain conceptual component. Relating text to components presupposes a coding scheme and certain procedures. The scheme developed has been discussed in Bierschenk & Bierschenk (1986, b) and will be given in concise form here.

1. The coding scheme marks the two dimensions intention and orientation through a hierarchy in a two-figure code.
2. The intentional dimension contains components whose two-figure codes begin with 1-9 and end with 0.
3. The figures denoting the orientational dimension symbolize under which main component a textual unit sorts and the order relations between subordinations.
4. The figures denoting the organizational boundaries are also given two-figure codes, whose first figure is 0 reflecting independency or association.

This scheme is fully applied in the formatting of the conceptualizations, as shown by the formatting of the previous exemplifications.

Table 1. Formatting of text

Text data	Code	Text data	Code	Text data	Code
.	00	de	60	:	
[Ø] aO	30	kommunalt	60	att	01
Titta	40(a)	[att]	01	:	
på	60	:		hur	01
Aa [Ø]	60	de	30	kommunen	30
hur	01	flesta	30	ska	40(a)
:		tycker	40(a)	Aa [Ø]	50
och	01	ju	50	att	01
det	30	att	01	[Ø] aO	30
är	40(a)	:		spara	40(a)
ju	51	;	0100	Aa [Ø]	50
inte	52	varför	01	?	01
bara	50	:		:	
bland	60	då	01	i	60
				Aa [Ø]	60
				.	00

Comment. In the first section of Table 1 are exemplified main and subordinate codes within a component ('ju inte bara'). The second section contains two examples of a string being a stop-word, i.e. does not count as subordinate ('de' ('the')). The double code of the comma marks the identification of a technically defined sentence opener. The last character of the third section would have been coded with a 90, if the end of the sentence had also been the end of the text.

The matrix construction is based on the definition of a structural unity labelled " block ". Each block contains an A a O relation, which is the starting-point for the construction of the basic matrices. The strings identified with 30-codes make up the row entries, while strings identified with 50-, 60-, 70-, and 80-codes constitute the entries of the columns. Each one of these are represented in a matrix of its own. Thus the block in the second section of Table 1, for example, has the relation: 30 = 'de flesta' and 50 = 'ju', which means that every block has only one agent and at least one objective. It is important that every realization of a structural relation can be unambiguously identified, otherwise it cannot be counted. It is not uncommon that whole blocks or parts of blocks constitute a component. This requires that the graphical form is preserved. If not, similarity matching cannot be performed. Morphological variations are treated as expressions of uniqueness. Behind that decision lies the conception that morphological variability takes up perspective information, because it is linked to the development of a discourse.

Table 2 represents the affinities of the first sentence processed in its entirety.

Comment. No running text develops without an 'I' and a 'you' referent. This means that the 'I' variables in the matrix have as many referents as there are persons involved. In the example given in Table 2, the text was produced by one person only. The interchangeability of the variables 'I', 'you', 'one', and 'we' has to be treated as the producer's way of incorporating others into his own perspective. Mixing up these referents indicates that no perspective

difference between producer and other real or imagined referents exists. Thus it is not only the 'one' referent but also 'I' and 'you' that function generically. A consequence for the matrix construction is that an implicit 'I' referent signals an X-variable and an implicit 'you' referent an Y-variable.

To determine the groupings which might exist in the material, every relation is marked only once. If identical relations are observed during the processing, these are booked but do not influence the numerical calculations. The computed matrix is the input to a cluster analysis.

When observations are independent of size, the computation of a distance value seems to be the most meaningful procedure for grouping a set of variables into natural groups (Sokal & Sneath, 1963).

Table 2. Representation of affinity in a N x n type matrix

	Objectives: Figure component								
Agents	1	2	3	4	5	6	7	8	9
1	1	*							
2	1								
3		1	1						
4				1					
5					1				
6						1	1	1	
7									1

Agents	Objectives
inställningen (the attitude)	idag (today)
det(inställningen+idag)	ju inte bara (you know not only)
(it(the attitude+today)	de flesta+ju (the majority+you know)
de flesta (the majority)	ju (you know)
jag (I)	ju min lön (you know my salary)
X(varför) (X(why))	jag (I)
kommunen (the municipality)	kommunen+det+väl jag
det(kommunen+det+väl jag)	(the municipality+it+surely I)
it(the municipality+it+surely I)	det+väl jag (it-surely I)
	väl jag (surely I)

* zeros suppressed

The method used for computing the distances is Ward's (1963) method. Ward proposes a computation of the loss of information resulting from each step in the grouping process. The loss of information is measured by the total sum of the squared deviations of every point from the mean value of the cluster to which the point belongs (Anderberg, 1973; Everitt, 1974). The crystallization of significant groupings has been performed by means of a t-test (Rule 1: Upper Tail Rule) which is reported in the manual of the CLUSTAN program (Wishart, 1982, pp 14–16). The output of the program is maximized to eleven standardized deviations sorted in declining order. These may be examined in two ways: (1) searching for a natural shred in the hierarchy, which is a classical procedure in all multivariate analyses, (2) searching for a t-value. In the latter case, a t-statistics is established with (c = cluster -1) number of degrees of freedom. This statistics is computed by a multiplication of the deviation with the square root of c-1. In the manual, Wishart (1982) mentions n-1, where n = the number of values on the optimizing function. However, a c-based instead of an n-based test value reduces the problem that the Error Sum of Squares cannot be regarded as normally distributed. They are bound to be greater than .000. Moreover, there is a dependency in the way of computing the deviations, because, according to Wishart's procedure, the value being tested is also contained in the estimation of the standardized deviations. If the test is based on n-1, then accidental variations get too much weight. By a drastic reduction of the degree of freedom, the test becomes much more conservative, which reduces this risk considerably.

The grouping of agents related to the Figure component has resulted in eight predicted clusters, where the t-value of the last significant grouping lies above the lower bound $t_{.975}$ of the confidence interval of the t-distributions. The groupings of the Figure component shows that eleven predicted clusters are significant with the lower bound of $t_{.995}$. In this case, all real differences have been treated as significant and have been reported in Figure 1. The agents related to the Ground component have given rise to four predicted clusters with the lower bound of $t_{.95}$ for the fourth

grouping. For the Ground component, eight predicted clusters are significantly differentiated. The lower bound of the confidence interval is for the last grouping $t_{.95}$. For space reasons, the basic data and the distance values as well as the confidence intervals for every significant grouping are not reported here, but may be obtained from the authors.

Topographic Description

The startingpoint of the developing process reflected in Figure 1 is the textual and conceptual continuities and discontinuities characterizing the text. The step between the grouping of variables and their graphical representation means a naming of the groups, which result from the analysis. The names are given as terminals at the sides of the planes. The assumption is that the names represent the number of states required for a complete specification of the concept formulation process. The results of the process transiting through the states is reflected in the phase space.

The Transformational Process of the Figure Component

The point at which the process starts is the state named Lack of Opinion. This state will now be discussed with respect to the way it was established. The textual entries, as they result from the coding algorithm are strings coded as Figure (see Table 2). A paranthesis in the string marks a supplementation or differentiation of the string. A plus marks the existence of a verb.

Lack of Opinion

1 idag (today)
8 väl jag (surely I)
9 samma resonemang här (the same reasoning here)
22 inte fan+han det inte (not the devil+he it not)
23 han+det han+någon betydelse (he+it he+some importance)
48 det politiska livet (the political life)
54 beslut (decision)
66 det politiska jobbet (the political job)
40 medvetna (conscious)
76 det(om situationen) (it(about the situation))
82 det kanske (it maybe)
96 gammal och hela det här (old and all this)
99 fan man (the devil one)
103 det här (this)

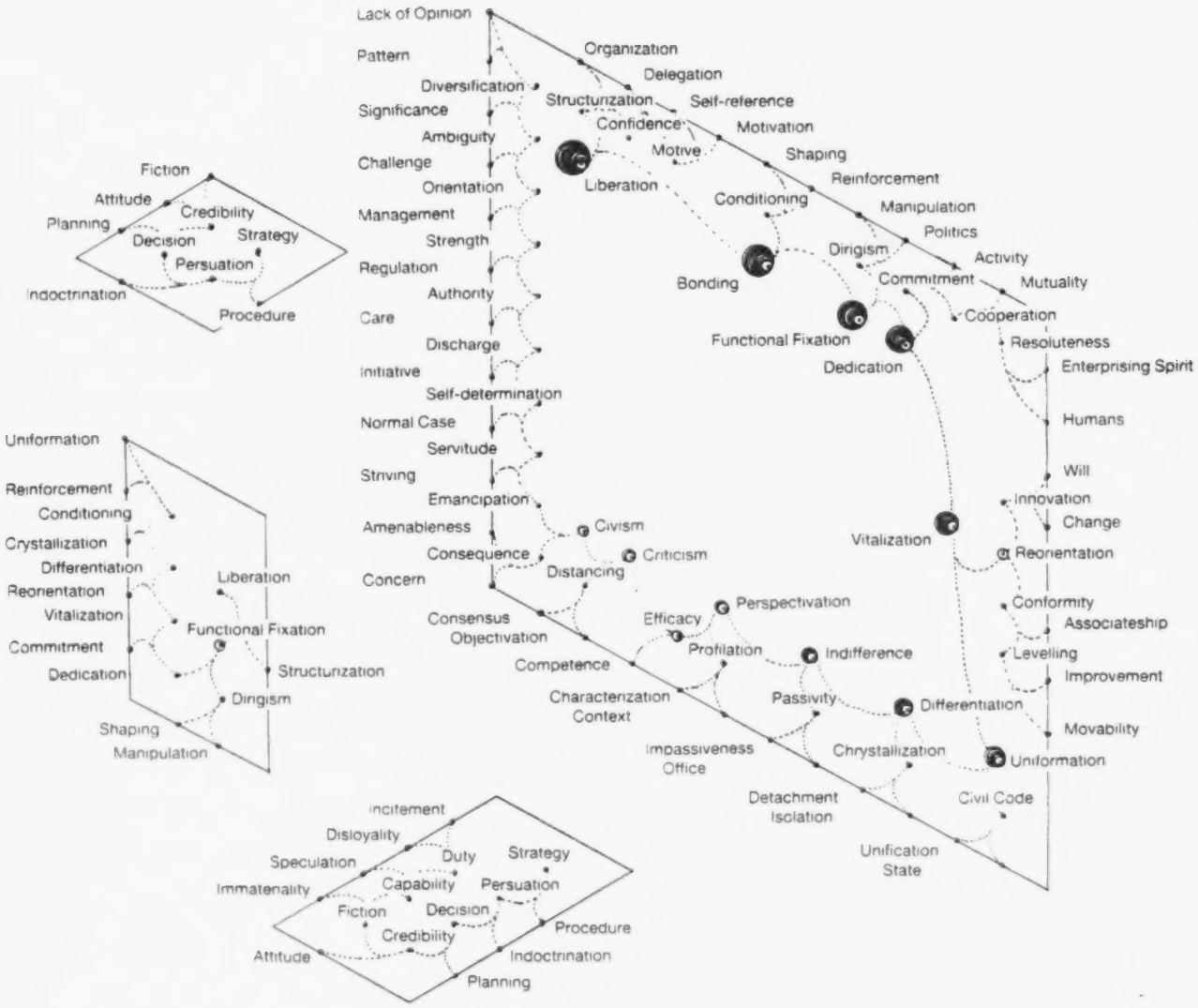

Figure 1. Operating structural relations characterizing perspectives and objectives. Background: Figure component; foreground: perspective on Figure; bottom: Ground component; top: Perspective on Ground.

118 värdefullt, inte minst (valuable, not least)
119 inte ens sånt+vi (not even such things+we)
1 2 märke (mark)
124 den här frågan (this question)
127 man+det politiska livet precis (one+the political life just)
14 du inte (you not)
68 X+jag+av X(på det sättet)+du (X+I+of X(in that way)+you)
121 var och en+på dumburken på kvällarna (everyone+at the " stupid screen " in the evenings)

Comment. The translation is literal from Swedish.

A group may contain so many variables that it seems almost impossible to find what is prototypical of them. In such cases, it may be helpful to discern smaller groups in which the prototypical is easier observable, and to continue the abstracting process afterwards. At a first glance on Lack of Opinion, the variables give the impression of being related to a description of an attitude or opinion. These very wide concepts may be demarcated so as to concern professional and political aspects. By negations and words of reinforcement being present, it is possible to see a passivity aspect in the material. This passivity may be further specified to concern an evasion. If the analysis had stopped at the first abstraction, a concept like " social attitude " could have been the result. It is very likely that the continued analytical work would have enforced a higher precision, for example, " civil passivity ". If civil passivity shall not comprise passive resistance, then the intersection of social attitude and civil passivity seems to be the absence of a standpoint and a forming of an opinion.

The naming of a group aims at abstracting prototypical information. In this process, it is important to determine something that all the variables have in common and to avoid that extreme aspects get a predominance.

The dashed curve in the phase space denotes the movement of the process, which becomes modified by a new state, Pattern, the name of the following group.

Pattern

2 ju inte bara (you know not only)
125 de flesta + ju (the majority + you know)

As is illustrated, a group may consist of one or a few variables. Is it a one-variable group, it may be that a variable is representing the name of the group, but as a rule, the variables are too concrete to function as names.

The intersection of something lacking and something depicting itself as a pattern is defined by Diversification. At this stage of the process development, it emerges that the phenomenon is widely extended and multiply manifested. When the process moves downwards this multiplicity is modified by Significance. Between something that is insufficiently expressed and multiply observable lies Ambiguity. The next following state of transition is Challenge, which modifies Ambiguity with the result of an enforcement of Orientation. At this stage a standpoint is called forth concerning the person's conduct to his environment. In that the process transits a state marked Management, it becomes obvious that the standpoint is on the ability to take charge of a leader function. The result is Strength as an expression of the property a leader must have to be able to organize and direct his area of responsibility.

The next following state is named Regulation, which underlines the need for Authority, but authority has to be conceived in relation to the need for taking up responsibility. When the process reaches the state of Care, this indicates that the resposibility is transferred from persons to some administration which has the command over the persons' range of action. Discharge at the intersection denotes that a person is freed from having a preparedness for action. Initiative is the state that modifies the preparedness for action and in the intersection of the last two, Self-determination is expressed. This possibility must be regarded in relation to a Normal Case, which modifies the possible Self-determination to Servitude. At this point, the space for participation is marked, which is determined by laws and regulations and the general maintenance system. The state of Striving leads the process to Emancipation. By that, the process expresses the need for the identification with something that is of a pressing nature, either professionally, socially, or culturally. Here the first cycle has been established

and the continuity of the process is broken by a discontinuous transition.

When the process restarts, it takes up a new path, which begins in the state named Amenableness. When modified by Concern, the intersection is defined as Consequence. This path marks the insight into the need for a managing function and the requirement of the awareness of common concerns. Only in this way a meaningful life can develop.

Discontinuous transitions appear when the process can follow more than one path. When two such paths cross each other, a new singularity comes into existence, which is marked with a circle. This peak is part of the forming of the continuous course of the process. The conceptualizing process moves towards its final position and each time two paths cross each other, a deepening takes place. If, on the other hand, the process moves towards the base, it loses in depth and, correspondingly, it looses circles.

To what does the first encircled singularity give expression? Obviously it characterizes the conditions defined by a person's relation to the society in which he lives. The focus is on an analysis of how the person may adapt to a collectivization of single functions of a society. Provided that some articulated standpoint is not expressed and that the concerns of the society is also the concerns of the individuals, the prerequisite of Civism is present.

At this point, a new path begins in the state of Consensus and transits through Objectivation to a new singularity, Distancing. This new path means that a prevalent agreement (consensus communis) becomes materialized with the result of a reservation. In that Civism is transformed by Distancing, the possibility arises that a Criticism can appear in the process. By the appearance of Criticism the second phase can begin.

The first state of the second phase is Competence, which influences the Criticism. Their intersection emerges as Efficacy, which marks that the two aspects together constitute a potential. The next state, Characterization, gets its modification by the transi-

tion through Context, telling that without a Context some Profilation of a problem cannot be made. Provided that the criterion is based on a potential and that a Profilation has been possible to make, the process can produce a Perspectivation. This is the startingpoint of the third phase.

The first state of the third phase is discerned as Impassiveness, which results in Passivity in the perspective of an Office function. Thus at this stage both non-participation and inactivity are brought to the fore. When crossing the Perspectivation point, this path leads to Indifference. This result implies a giving up of a standpoint. The intersection is the end of the third phase and beginning of a forth one.

The process now leaps into a new path, which is defined by the two states of Detachment and Isolation, in whose intersection Crystallization stands for a change and a separation as requirements of a formation process. At the point where this path crosses the startingpoint of the fourth phase a Differentiation emerges. This singularity is a prerequisite of independence and autonomy. Here the process takes a new step into a path denoting a pressure towards a Unification. This is reinforced by State, thus generating a Civil Code. The State should be interpreted as the existing social order and Civil Code as the typical striving towards bureaucracy, which transforms the aspiration for autonomy to a Uniformation. This is the final point of the fourth phase. How far has the process reached when Uniformation is the startingpoint to the fifth phase? Differentiation precedes an individualization at the same time as the process gives expression to a liberation from a Civil Code.

The fifth phase starts out from Movability. The process transits through Improvement, which indicates some kind of achievement. Thus Levelling expresses this cognitive intersection. Through Associateship, this level of achievement gets the character of Conformity. From here, the process leaps into a new path which marks a Will to Change. This innovative striving strongly modifies the Conformity, which is to be seen in the singularity of Reorientation.

At this point, the process gives expression to a need for being able to work and develop independently. The final point of the fifth phase, therefore, is characterized by Reorientation influencing the Uniformation in such a degree that a Vitalization will take place. In the cognitive process the point has now been reached where the overshadowing public sector no longer gives any room for regeneration at the same time as the individual feels estranged before responsibility. The Vitalization at this stage should therefore be interpreted as the need for manifoldness and stimulation.

Humans is the state in which phase six starts. As the process picks up the Enterprising Spirit, the intersection of Resoluteness is created. Through Mutuality this Resoluteness is modified to concern Cooperation. When some Activity is unified with Cooperation, their intersection may be a Commitment. Commitment is then the prerequisite of the final point of this phase in that the Vitalization that has emerged in the fifth phase becomes transformed and specified to Dedication. This is nothing that can be obtained or brought forth through administration.

Through Politics and Manipulation the process leaps into phase seven and reaches Dirigism. This point marks that officials unduely try to see to it that manipulations of an individual's own will develop in the prescribed direction. Such encroachments may be performed by officials who have no juridical responsibility for their actions. As a result, the Dedication is modified to a Functional Fixation, which is the last position in the seventh phase.

The eight phase is characterized by two states, Reinforcement and Shaping, whose unifying point is Conditioning. In this course of the process, there is an expression of the opinion that the social order has developed to a wellfare state in which the person has been deliberated from the necessity of making a choice between alternatives. This fact together with the endpoint of the seventh phase, Functional Fixation, leads to the startingpoint of the ninth phase, which is Bonding.

From Bonding the process leaps on to a path beginning with the state of Motivation. By transiting through Self-reference, the pro-

cess picks up the importance of Motive. When transformed by Delegation it can be seen as a manifestation of Confidence. The way in which Confidence can be expressed within an Organization is indicated with Structurization, which prerequires that there are limits as to what a person could be forced to accept. In that Structurization modifies Bonding, the final result of the process appears as Liberation.

The structural relations that have carried Liberation indicate a process, which must have developed in agreement with independent environmental relations. The dynamics visualized point to an inherent necessity which has steered the cognitive process. The syntax of language has operated for the purposes of producing a theme without determining in a unique way the course of development of the cognitive process. That Liberation is the root of a cognitive process having been transformed so that its course coincides with observed environmental relations without loosing its fundamental individuality has been confirmed in research seminars after the results of the analysis have been presented. The conceptual relations show a liberation process which has consequently carried the contrasts of Bonding and Liberation. The interviewed person who occupied a leading position within the public sector has left and has started a company.

The Transformational Process of the Ground Component

The process starts with the state named Incitement and transits through Disloyality, which results in Duty. The lack of stimuli in the working life and a general flattening of criteria for a person's conduct to his work lead to the existing conception of Duty.

The next state is Speculation, which modifies the Duty to Capability. At this stage in the development the Duty is reflected upon with the stress on whether particular employees are willing or capable of making an effort.

A state of Immateriality transforms the process to Fiction. In an activity in which most of the tasks are concentrated on following general directives, it easily happens that reality appears

like fiction. The state of Attitude then modifies the Fiction and brings out Credibility. The attitude towards the activities of the public sector calls for judgment and qualification.

When Planning forms an intersection with Credibility, the process reaches Decision. At this stage of development it is pointed to the basic data or the procedure underlying the decision making and its legitimation.

Decision modified by Indoctrination becomes Persuation. That the process transits through this state marks that massive psychological means are used with the purpose of influencing the forming of an opinion in the direction of the wish of the community designers. The state of Procedure transforms the Persuation to the endpoint, which is Strategy.

The process described shows no leap, which means that it is a one-phase process. A leap does not appear until a minimum disappears entirely or an intervening maximum is absent. The singularity of the Ground, that is the endstate in which the process stops, denotes that the Ground is based on Strategy and its variability.

Perspectival Transformation

The transformational process described sofar has concerned the Figure and Ground components. After these two analyses have been carried out, the perspective on Figure and Ground can be analyzed. The startingpoint for an analysis of the perspective on the Figure is the grouping of the Agent variables. The Agent groups get their names through the variable groups in the Figure or Ground components to which the Agent variables belong. One example of Agent variables related to the Figure is

Manipulation

1 (X)

This Agent group contains one variable,(X), which belongs to the state of the Figure named Manipulation. In the same way all the Agent groupings are named except in those cases where an Agent grouping contains variables referring to two or more states in the

Figure. The prototypical name will then be the concept which unifies two or more states.

The transformation process starts in the state of Uniformation. The next following Agent grouping contains variables related to Reinforcement, which is the state through which the perspectival transformation transits. With the point of departure in the start state, it now becomes possible to look up the singularity of the curve, which is Conditioning. The result of the perspectival transformation then is that Conditioning unifies the concept pair Uniformation and Reinforcement. Thereafter Crystallization follows, which modifies Conditioning. The highest peak between these two is Differentiation.

The next following state is Reorientation through which Vitalization comes into focus. By the state of Commitment, Dedication is brought forth, which is the endpoint of the first cycle in the perspective. Thereafter a leap into a new path takes place by which Dirigism is lifted out from the Figure. At the point where the first and second paths intersect, Functional Fixation becomes available. The highest point in the perspective picks up Liberation. Through the perspectival transformation of the Figure component new structural relationships become visible. The two cycles mark the conception that Dedication when put into relation with Dirigism can only lead to a fixation of a person's possibility for action. Only a Structurization can free the person from this blocking.

As a rule, the perspective with which Figure or Ground is viewed is smaller than what their focus is. It depends on the fact that the display of relations requires a certain degree of permanence in the perspective. In the perspective, some central aspects are focussed upon. These are put together and transformed to a new dimensionalization.

The development of the Ground perspective is characterized by a one-phase process. It starts in the state of Fiction and has Strategy as its final point. It is important to observe that the process having generated the Ground structure is of the one-phase type, too. But they differ in one important respect. The perspective

lifts up only that part of the Ground structure that has to do with the decision making. The part of the structure concerning the leadership function is left out. This concentration on the decision making function may be interpreted as being of special concern to the interviewed official.

Through the various transformational steps defining the perspective, novel dimensions and thus novel information emerge. Perspectival analysis in this context should not be equalized with a shifting of viewpoints or change of the visual field. Of course, such a shifting could easily be depicted, provided that the representation refers to position (distance). The aim of representing a process, however, requires that the nodes are allowed to represent structural relations and the development of the process. Under this condition only, the transformational process can emerge.

The Dimensionality of Figure and Ground

If a process shall develop, a space, in general multidimensional, is necessary. The dimensionality characteristic of the structure of the Figure component may be described by four dimensions. The first two lie at the base of the Figure. The first one of these is characterized by the bipolar concepts of Amenableness and Civil Code and thus seems to express a Concernedness. The second dimension is determined by Striving vs Uniformation, which points to a Standpoint. The first dimension in the top of the Figure is defined by Pattern vs Enterprising Spirit, which seems to be an expression of Alertness. The second dimension has Significance and Humans as its two poles, in certain respects expressing a Deliberation.

These four dimensions on the horisontal level are cognitively determined, whereas the vertical dimensions describe relations specifying the theme of discourse. This is evident from the poles, for example, Shaping vs Impassiveness or Organization vs Objectivation. As a consequence, a concept can be specified as something dynamical that can be observed at the intersection between cognition and context.

The cognitive dimensions of the perspective on the Figure are three. The first one stands for a Re-formation, which signals a de-

tachment from a system that fosters a conditioned behaviour. The dimension is described by the endpoints Commitment and Dirigism. The second dimension may be seen as an expression of change of dependent relations. This may be interpreted as Divergence, which marks a discontinuity with respect to a system that enforces quantitative change as a result of linear thinking. The endpoints are Reorientation and Structurization. The third cognitive dimension is defined by Crystallization and Liberation and seems to stand for an Individualization.

This impression is further profiled by the theme specific dimensions, of which the first one is specified by the poles Conditioning and Shaping. It concerns a conceptualization of the behaviour of the individual in contrast to a structure of power. The second dimension, which is characterized by Manipulation and Liberation, may be regarded as a quality dimension, where central moral and ethical aspects come into new light.

The cognitive dimensions characterizing the Ground component are three. The first one has Immateriality and Planning as its end poles and seems to express a demand for Realism. The second is defined by Speculation and Indoctrination, which mark an assessment of Competence. The third dimension is characterized by Disloyality vs Procedure marking a Moral aspect, that is the conception of Duty in relation to the service for which the holder of the position has been employed.

The theme specific dimensions are two. The first one represents an ambiguity in the conception of Responsibility. The second marks a Conduct and is restricted by the poles Attitude and Strategy. Typical of the Ground is that it lacks conceptual embeddings. From an ecological perspective the Ground has no relief and thus contrasts with that which the Figure represents. However, it is determined by a pattern with characteristic features.

The perspective on the Ground illustrates that it is a short-term goal with fatal consequences if credit is given to a well-functioning indoctrination machinery in order to obtain political and administrative agreements.

Discussion

The analysis described contrasts with the usual way of presenting convergent results, that is small variations produced by the syntactic mechanism are followed by small variations in the corresponding cognitive movements. When a concept is being formulated this seems to take place according to the two hypotheses at the beginning of the article. The text is initially undifferentiated. Linguistic strings can be represented in accordance with an optimizing function and be grouped with respect to the loss of information. The continuity presupposed in Hypothesis 1 concerns an empirical grouping of variables which correlate positively with each other, in particular those whose pattern of correlations with other variables result in collinear groupings.

Hypothesis 2 concerns the development and structural stability of the process. These may be discerned as recurrent identifiable words and phrases which can be given a prototypical name. A text, however, is more dynamic than static, since it transforms information during the course of conceptualization. It has the tendency to establish cycles and singularities which make it possible to represent topographically conceptual transitions and to decide upon cognitive relations of the kind that cannot possibly be directly observed.

The conceptualizing process shows structural stability. At the end of the process there are two distinct concepts which contrast with each other: Liberation and Bonding. The " shaping " process stands out as the true psychological foundation for the development of social behaviour, which, thanks to later approximations, will lead to an ideal civil conduct. On the other hand, the structure of the Figure is characterized by a struggle against normative thinking. The perspective structure underlines that Liberation is in the focus of the text producer.

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